MEMORANDUM

DATE: 2/8/99

SUBJECT: **Avermectin**. Anticipated Residues for the Human Health Risk Assessment for the Request for Tolerances on Grapes, Raisins, and Peppers.

DP Barcode: D252609 PRAT Case#: 288940
PC Code: 122804 Caswell#: 063AB
Trade Name: AGRI-MEK EPA Reg#: 618-98
Class: Insecticide 40 CFR: §180.449
MRID: None

FROM: William D. Cutchin, Chemist
Registration Action Branch 2
Health Effects Division (7509C)

THRU: G. Jeffery Herndon, Senior Scientist
Registration Action Branch 2
Health Effects Division (7509C)

THRU: Richard Loranger, Branch Senior Scientist
Registration Action Branch 2
Health Effects Division (7509C)

TO: George LaRocca, Product Manager
Registration Division (7505C)

Background

Merck & Co., Inc., has submitted a request to establish tolerances for the combined residues of avermectin (also referred to as abamectin) [≤80% avermectin B1a (5-O-demethyl avermectin A_{1a}) and ≥20% avermectin B1b (5-O-demethyl-25-de (1-methylpropyl)-25-(1-methylethyl) avermectin A_{1a})] and its delta-8,9-isomer in or on the commodities grapes, raisins, and grape juice at 0.02 ppm. The registrant has also submitted data on the residues of avermectin in or on chili peppers and, with the existing tolerance on bell peppers, requests a tolerance on peppers at 0.01 ppm.

Introduction

As part of the petition, the registrant has submitted a dietary exposure analysis including a probabilistic acute analysis. RAB2 has examined the analysis and found it to be inadequate. In order to establish the above tolerances, a new analysis was conducted in accordance with current

Agency policy. This memo is to provide anticipated residues (AR) for the residues of avermectin to be used in the DEEM acute probabilistic analysis and the upcoming human health risk assessment.
RAB2 made the following recommendations in a residue chemistry review concerning the above petitions (PP# 7F4844, DP Barcode: D238327, W. Cutchin, 9/18/98):

> "Provided the registrant submits a revised Section F for peppers at 0.02 ppm, and deletes the requested tolerances for juice and raisins, RAB2 can recommend for the establishment of avermectin tolerances on peppers and grapes at 0.02 ppm."

Tolerances are established for the combined residues of the insecticide avermectin [a mixture of avermectins containing ≤80% avermectin B1a (5-O-demethyl avermectin A_{1a}) and ≥20% avermectin B1b (5-O-demethyl-25-de (1-methylpropyl)-25-(1-methylethyl) avermectin A_{1a})] and its delta-8,9-isomer in or on the following commodities:

Almonds	0.005 ppm
Apples	0.020 ppm
Celery	0.05 ppm
Cucurbits (cucumbers, melons, and squashes)	0.005 ppm
Lettuce, head	0.05 ppm
Pears	0.02 ppm
Peppers, bell	0.01 ppm
Strawberry	0.02 ppm
Tomatoes, fresh	0.01 ppm
Walnuts	0.005 ppm

Avermectin has tolerances on the following commodities with the expiration/revocation date of 9/1/99:

Cattle, fat	0.015 ppm
Cattle, meat	0.02 ppm
Cattle, mbyp	0.02 ppm
Citrus whole fruit	0.02 ppm
Cottonseed	0.005 ppm
Hops, dried	0.5 ppm
Milk	0.005 ppm
Potatoes	0.005 ppm

Avermectin also has the following Section 18 time-limited tolerances which will expire 1/31/00:

Basil	0.05 ppm
Celeriac	0.05 ppm
Spinach	0.05 ppm

Magnitude of the Residue

HED has examined the assumptions made in conducting the analysis and revised the following residue data files (rdf) using the previous HED memo cited: celery, strawberry, citrus, tomato, and pear residue files (PP#9F3787, DP Barcode: D207554, J. Herndon, 12/20/94), apple, (PP#4F04345, DP Barcodes: D201328 and D201333, CBTS#: 13512 and 13513, J. Herndon, 5/1/95), grape (PP# 7F4844, DP Barcode: D238327, W. Cutchin, 9/18/98) and pepper (PP# 7F4844, DP Barcode: D238327, W. Cutchin, 9/18/98 and PP#3F04258, DP Barcode D194897, D198987; CBTS# 12519, 13174; MRID 429000-00, -01; M. Peters, 5/17/94). These files were corrected as follows and the column labeled "Total" will be used in the rdf file for each selected commodity in the probabilistic analysis.

HED has previously examined field trial data for selected commodities to determine anticipated residues (PP#9F3787, DP Barcode: D207554, J. Herndon, 12/20/94). After an update for current HED policy, the data from that memo and data for additional commodities are presented here.

Handling of Non-Quantifiable (NQ) and Non-Detectable (ND)Residues for All Crops **Except** Apples, Pears, and Strawberries

The method LOQ and LOD are 5 ppb and 2 ppb, respectively for all crops except apples, pears, and strawberries. In the following tables, the designations NQ and ND will be used. NQ refers to samples that were not quantifiable (2 - 5 ppb). Since these samples exhibited a clear peak in the retention time window of the compound of interest, albeit below the limit of quantitation (5 ppb), current HED policy allows a value of 2.5 ppb (½ x 5 ppb) be assigned to these samples for the purposes of risk assessment. ND refers to samples that were not detected (< 2 ppb). For the purposes of risk assessment, a value of 1 ppb (½ x 2 ppb) will be used.

If B_1a is ND

Abamectin (avermectin B_1) is produced by a fermentation process using a strain of Streptomyces avermitilis. (This manufacturing process was reviewed in detail in L. Cheng's memo dated 5/1/86 reviewing EPA 618-OL). The technical product abamectin is a mixture of two homologs containing not less than 80% avermectin B_1a and not greater than 20% avermectin B_1b. Based on the residue data reviewed to date, the metabolism in plants does not seem to alter this ratio of B_1a to B_1b (at least 4 to 1). Therefore, for the purposes of risk assessment, for those samples which exhibit non-detectable (ND) B_1a residues, a value of ¼ of ND will be used to estimate B_1b residue levels. Since a value of 1 ppb will be used for ND B_1a residues, a value of 0.25 ppb (¼ x 1 ppb) will be used to estimate the B_1b residue contribution of those samples.

Handling of Non-Quantifiable (NQ) and Non-Detectable (ND)Residues for Apples, Pears, and Strawberries

The method LOQ and LOD are 2 ppb and 1ppb, respectively for apples, pears, and strawberries. In Tables 3, 4, and 6, NQ refers to samples that were not quantifiable (1 - 2 ppb). Since these samples exhibited a clear peak in the retention time window of the compound of interest, albeit below the limit of quantitation (2 ppb), current HED policy allows a value of 1 ppb (½ x 2 ppb) be assigned to these samples for the purposes of risk assessment. ND refers to samples that were not detected (< 1 ppb). For the purposes of chronic risk assessment, a value of 0.5 ppb (½ x 1 ppb) will be used.

If B_1a is ND

See section above (All Crops **Except** Apples, Pears, and Strawberries, If B_1a is ND). Therefore, for the purposes of risk assessment, for those samples which exhibit non-detectable (ND) B_1a residues, a value of ¼ of ND will be used to estimate B_1b residue levels. Since a value of 0.5 ppb will be used for ND B_1a residues, a value of 0.125 ppb (¼ x 0.5 ppb) will be used to estimate the B_1b residue contribution of those samples.

Processed Commodities

To determine the residue level for each crop with processed commodities, the average residue level for each crop was used along with the previously determined processing factor (PP#9F3787, DP Barcode: D207554, J. Herndon, 12/20/94 and PP#4F04345, DP Barcodes: D201328 and D201333, CBTS#: 13512 and 13513, J. Herndon, 5/1/95) or one calculated here. The same value (average field trial level) was entered as the residue for the RAC, juice, and juice concentrate. Where available, the concentration factor for juice from an actual processing study was entered in lieu of the default DEEM adjustment factor. In all cases, the concentration ratio in DEEM for juice going to concentrate was preserved.

Celery

The method LOQ and LOD are 5 ppb and 2 ppb, respectively.

Table 1. Residue Summary of Avermectin in/on Celery

	Avermectin Residues (ppb)		
Study ID	B1a	B1b	Total
001-86-024R	11.1	ND (1)	12.1
	18.1	NQ(2.5)	20.6
	7.2	ND (1)	8.2
	15.6	ND (1)	16.6
001-86-025R	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1

001-86-026R	NQ(2.5)	ND (0.6)	3.1
	6.4	ND (1)	7.4
	6.4	ND (1)	7.4
	7.9	ND (1)	8.9
001-86-029R	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
001-86-146R	NQ(2.5)	ND (0.6)	3.1
	6.3	ND (1)	7.3
	ND (1)	ND (0.25)	1.25
	NQ(2.5)	ND (0.6)	3.1
001-86-147R	8.8	ND (1)	9.8
	9.5	ND (1)	10.5
	14.7	ND (1)	15.7
	15.8	NQ(2.5)	18.3
001-86-557R	10.6	ND (1)	11.6
	6.6	ND (1)	7.6
	7.8	ND (1)	8.8
	8.2	ND (1)	9.2
001-86-558R	NQ(2.5)	ND (0.6)	3.1
	7.2	ND (1)	8.2
	5.6	ND (1)	6.6
	5.7	ND (1)	6.7
001-86-565R	35.6	NQ(2.5)	38.1
	8.7	ND (1)	9.7
	16.5	ND (1)	17.5
	14.0	ND (1)	15
001-86-671R	8.7	ND (1)	9.7
	8.5	ND (1)	9.5
	7.8	ND (1)	8.8
	7.9	ND (1)	8.9
001-87-0002R	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
001-87-0014R	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1

	6.0	ND (1)	7
	10.1	ND (1)	11.1
001-87-1012R	29.1	NQ(2.5)	31.6
	7.3	ND (1)	8.3
	20.0	ND (1)	21
	7.2	ND (1)	8.2
	8.3	ND (1)	9.3
	8.2	ND (1)	9.2
	NQ(2.5)	ND (0.6)	3.1
	18.2	ND (1)	19.2
001-87-1013R	11.1	ND (1)	12.1
	18.8	ND (1)	19.8
	23.1	NQ(2.5)	25.6
	23.1	NQ(2.5)	25.6
	19.8	ND (1)	20.8
	24.2	NQ(2.5)	26.7
	19.5	ND (1)	20.5
	22.1	ND (1)	23.1
	9.5	ND (1)	10.5
	8.8	ND (1)	9.8
	12.2	ND (1)	13.2
	12.5	ND (1)	13.5
	5.6	ND (1)	6.6
	6.4	ND (1)	7.4
	11.0	ND (1)	12
	11.8	ND (1)	12.8
001-87-5028R	7.5	ND (1)	8.5
	7.3	ND (1)	8.3
	5.6	ND (1)	6.6
	22.4	ND (1)	23.4
	8.1	ND (1)	9.1
	5.7	ND (1)	6.7
	9.1	ND (1)	10.1
	9.6	ND (1)	10.6
		AVG=	10.2

No information is available for celery juice. The default value, 1, will be used for the celery juice processing factor and 10.2 ppb for the residue level.

Citrus

The method LOQ and LOD for citrus are 5 ppb and 2 ppb, respectively.

Table 2. Residue Summary of Avermectin in/on Citrus

	Avermectin Residues (ppb)		
Study ID	B_1a	B_1b	Total
Orange 001-86-061R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-86-169R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-86-196R	8.1	ND (1)	8.6
	7.8	ND (1)	8.3
001-86-515R	NQ(2.5)	ND (0.6)	3.1
	NQ(2.5)	ND (0.6)	3.1
001-86-596R	10.1	ND (1)	10.6
	11.2	ND (1)	11.7
001-86-698R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-86-003R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
Grapefruit 001-86-002R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-86-620R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
Tangelo 001-86-001R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-86-062R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
Lemon 001-86-114R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
		AVG=	2.5

The concentration factors listed below (PP#9F3787, DP Barcode: D207554, J. Herndon, 12/20/94) will be used with the average field trial residue level in the probabilistic analysis.

Commodity	Processing Factor
grapefruit	
juice	0.85
pulp	0.5
lemons	
juice	0.25
peel	2.5
pulp	0.5
limes	
juice	0.25
peel	2.5
pulp	0.5
oranges	
juice	0.25
peel	2.5
pulp	0.5
tangerine	
juice	0.25

Pears

The method LOQ and LOD for pears are 2 ppb and 1 ppb, respectively.

Table 3. Residue Summary of Avermectin in/on Pears

	Avermectin Residues (ppb)		
Study ID	B_1a	B_1b	Total
001-92-6016R	3.85	ND (0.5)	4.4
	3.36	ND (0.5)	3.9
001-92-6017R	4.84	ND (0.5)	5.3
	5.93	ND (0.5)	6.4
001-92-6018R	5.59	ND (0.5)	6.1
	8.91	NQ (1)	9.9
001-92-6019R	10.6	NQ (1)	11.6
	7.84	NQ (1)	8.8
		AVG=	7.1

The analysis includes residues in pear juice for which no data has been previously required. Since all other juices show reductions in avermectin residues from the raw agricultural commodity, HED will use the reduction factor for apples, 0.073, in the analysis (see apples below).

Commodity	Processing Factor
pear	
juice	0.073

Strawberries

The method LOQ and LOD in strawberries are 2 ppb and 1 ppb, respectively.

Table 4. Residue Summary of Avermectin in/on Strawberries

	Avermectin Residues (ppb)		
Study ID	B_1a	B_1b	Total
001-88-1026R	NQ(1)	ND (0.25)	1.25
	5.7	ND (0.5)	6.2
	NQ(1)	ND (0.25)	1.25
	8.8	ND (0.5)	9.3
001-88-1027R	NQ(1)	ND (0.25)	1.25
	NQ(1)	ND (0.25)	1.25
	5.8	ND (0.5)	6.3
	6.7	ND (0.5)	7.2
	5.3	ND (0.5)	5.8
	5.6	ND (0.5)	6.1
	7.6	ND (0.5)	8.1
	8.4	ND (0.5)	8.9
001-88-6020R	5.6	ND (0.5)	6.1
	5.6	ND (0.5)	6.1
	7.4	ND (0.5)	7.9
	6.9	ND (0.5)	7.4
	ND (0.5)	ND (0.125)	0.63
	7.8	ND (0.5)	8.3
	8.5	ND (0.5)	9.0
	7.7	ND (0.5)	8.2
001-88-6021R	5.0	ND (0.5)	5.5
	11.9	ND (0.5)	12.4
	9.0	ND (0.5)	9.5
	5.9	ND (0.5)	6.4
001-89-0004R	6.4	ND (0.5)	6.9
	5.6	ND (0.5)	6.1
	7.1	ND (0.5)	7.6
	6.2	ND (0.5)	6.7
001-89-0005R	5.9	ND (0.5)	6.4

	5.1	ND (0.5)	5.6
	7.5	ND (0.5)	8.0
	5.9	ND (0.5)	6.4
001-89-0024R	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
001-89-1007R	NQ(1)	ND (0.25)	1.25
	6.2	ND (0.5)	6.7
	6.5	ND (0.5)	7.0
	7.7	ND (0.5)	8.2
001-89-1018R	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
001-89-1019R	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
001-89-1020	10.7	ND (0.5)	11.2
	8.4	ND (0.5)	8.9
	8.0	ND (0.5)	8.5
	8.1	ND (0.5)	8.6
001-89-1021R	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
001-89-3004R	NQ(1)	ND (0.25)	1.25
	NQ(1)	ND (0.25)	1.25
	NQ(1)	ND (0.25)	1.25
	NQ(1)	ND (0.25)	1.25
001-89-3005R	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
	ND (0.5)	ND (0.125)	0.63
001-89-6003R	NQ(1)	ND (0.25)	1.25
	NQ(1)	ND (0.25)	1.25
	NQ(1)	ND (0.25)	1.25
	5.2	ND (0.5)	5.7
		AVG=	4.3

Since there is no data available for strawberry juice, the average residue field trial level will be used with the default concentration factor, 1, in the analysis.

Tomatoes

The method LOQ and LOD for tomatoes are 5 ppb and 2 ppb, respectively.

Table 5. Residue Summary of Avermectin in/on Tomatoes

	Avermectin Residues (ppb)		
Study ID	B_1a	B_1b	Total
001-86-030R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-86-031R (5 day PHI)	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-86-032R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	NQ(2.5)	ND (0.6)	3.1
001-86-033R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-86-148R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-86-149R (3 day PHI)	ND (1)	ND (0.25)	1.25
001-86-301R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-86-559R	5.4	ND (1)	6.4
	NQ(2.5)	ND (0.6)	3.1
	ND (1)	ND (0.25)	1.25
	NQ(2.5)	ND (0.6)	3.1

001-86-672R (5 day PHI)	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-87-0010R (3 day PHI)	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	NQ(2.5)	ND (0.6)	3.1
001-87-0011R (3 day PHI)	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-87-1000R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-87-1011R	ND (1)	ND (0.25)	1.25
	NQ(2.5)	ND (0.6)	3.1
	21.2	NQ(2.5)	23.5
001-87-3004R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-87-3012R (3 day PHI)	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-87-3036R (3 day PHI)	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-87-5024R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-87-5025R	ND (1)	ND (0.25)	1.25
	NQ(2.5)	ND (0.6)	3.1
	6.7	ND (1)	7.7
001-87-5026R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
001-87-6001R	ND (1)	ND (0.25)	1.25
	ND (1)	ND (0.25)	1.25
	NQ(2.5)	ND (0.6)	3.1

	AVG=	2.0

The concentration factors listed below (PP#9F3787, DP Barcode: D207554, J. Herndon, 12/20/94) will be used with the average field trial residue level in the probabilistic analysis.

Commodity	Processing Factor
tomato	
catsup	1.1
juice	0.21
paste	1.2
puree	0.40

Apples

The method LOQ and LOD for apples are 2 ppb and 1 ppb, respectively.

Table 6. Residue Summary of Avermectin in/on Apples

	Avermectin Residues (ppb)		
Study ID	B_1a	B_1b	Total
001-90-5016R	2.8	ND(0.5)	3.3
	NQ(1)	ND(0.25)	1.25
	NQ(1)	ND(0.25)	1.25
	ND(0.5)	ND(0.125)	0.625
001-90-5018R	5.9	NQ(1)	6.9
	4.1	ND(0.5)	4.6
	3.1	ND(0.5)	3.6
	2.7	ND(0.5)	3.2
001-91-1021R	NQ(1)	ND(0.25)	1.25
	ND(0.5)	ND(0.125)	0.625
001-91-1023R	2.9	ND(0.5)	3.4
	2.0	ND(0.5)	2.5
001-91-1024R	2.4	ND(0.5)	2.9
	NQ(1)	ND(0.25)	1.25
001-91-6016R	10	NQ(1)	11
	8.1	ND(0.5)	8.6
001-91-6024R	ND(0.5)	ND(0.125)	0.625
	ND(0.5)	ND(0.125)	0.625
001-91-3000R	6.9	ND(0.5)	7.4
	4.5	ND(0.5)	5
001-92-0026R	2.6	ND(0.5)	3.1
	NQ(1)	ND(0.25)	1.25

001-92-0027R	NQ(1)	ND(0.25)	1.25
	ND(0.5)	ND(0.125)	0.625
001-92-1014R	ND(0.5)	ND(0.125)	0.625
	ND(0.5)	ND(0.125)	0.625
001-92-1018R	NQ(1)	ND(0.25)	1.25
	ND(0.5)	ND(0.125)	0.625
001-92-3020R	3.7	ND(0.5)	4.2
	NQ(1)	ND(0.25)	1.25
001-92-6012R	3.3	ND(0.5)	3.8
	ND(0.5)	ND(0.125)	0.625
		AVG=	2.8

The concentration factors listed below (PP#4F04345, DP Barcodes: D201328 and D201333, CBTS#: 13512 and 13513, J. Herndon, 5/1/95) will be used with the average field trial residue level in the probabilistic analysis.

Commodity	Processing Factor
apples	
peel/cored	0.073
wet pomace	5.15
raw juice	0.073
clarified juice	0.073
applesauce	0.073

Grapes

The method LOQ and LOD for grapes are 5 ppb and 2 ppb, respectively.

Table 7. Residues of Avermectin in/on Grapes.

	Avermectin Residues ppb		
Study ID	B_1a	B_1b	Total
001-94-1009R	4.3	ND(1)	5.3
	5.3	ND(1)	6.3
001-94-1010R	2.4	ND(1)	3.4
	ND(1)	ND(0.25)	1.25
001-94-2002R	ND(1)	ND(0.25)	1.25
	ND(1)	ND(0.25)	1.25
001-94-2003R	ND(1)	ND(0.25)	1.25
	ND(1)	ND(0.25)	1.25
001-94-5004R	5.0	ND(1)	6.0

	6.7	ND(1)	7.7
001-94-5006R	NQ(2.5)	ND(0.6)	3.1
	2.7	ND(1)	3.7
001-95-1005R	ND(1)	ND(0.25)	1.25
	ND(1)	ND(0.25)	1.25
001-95-2008R	ND(1)	ND(0.25)	1.25
	ND(1)	ND(0.25)	1.25
001-95-5003R	ND(1)	ND(0.25)	1.25
	ND(1)	ND(0.25)	1.25
001-95-5009R	NQ(2.5)	ND(0.6)	3.1
	NQ(2.5)	ND(0.6)	3.1
001-95-5010R	3.0	ND(1)	4.0
	NQ(2.5)	ND(0.6)	3.1
001-95-5011R	ND(1)	ND(0.25)	1.25
	ND(1)	ND(0.25)	1.25
001-95-5025R	ND(1)	ND(0.25)	1.25
	ND(1)	ND(0.25)	1.25
		AVG=	2.7

The grape processing study shows that avermectin does not concentrate in juice or raisins (PP# 7F4844, DP Barcode: D238327, W. Cutchin, 9/18/98). The concentration factors calculated below will be used with the average residue levels in the probabilistic analysis.

Table 8. Residues of Avermectin in/on Grape Processed Commodities.

Commodity	Avermectin residues (ppb)*			Processing Factor
	B1a	B1b	Total	
Grapes, unwashed	10.0	NQ(5)	15.0	NA
Raisins	10.2	ND(1)	11.2	0.75
Juice, fresh	NQ(5)	ND(2)	7	0.47
Juice, processed	NQ(5)	ND(2)	7	0.47

* LOQ and LOD for grapes and juice: 5 and 2 ppb, respectively
LOQ and LOD for raisins: 2 and 1 ppb, respectively

Peppers

The method LOQ and LOD for peppers are 5 ppb and 2 ppb, respectively.

Table 9. Residues of Avermectin in/on Peppers.

	Avermectin Residues ppb		
Study ID	B_1a	B_1b	Total
Chili 001-94-8000R	NQ(2.5)	ND(0.6)	3.1
	NQ(2.5)	ND(0.6)	3.1
001-94-8001R	NQ(2.5)	ND(0.6)	3.1
	NQ(2.5)	ND(0.6)	3.1
001-94-8002R	ND(1)	ND(0.25)	1.25
	ND(1)	ND(0.25)	1.25
001-94-8003R	ND(1)	ND(0.25)	1.25
	ND(1)	ND(0.25)	1.25
Bell 001-89-3001R	NQ(2.5)	ND(0.6)	3.1
001-89-3002R	NQ(2.5)	ND(0.6)	3.1
001-90-0009R	NQ(2.5)	ND(0.6)	3.1
001-90-1014R	ND(1)	ND(0.25)	1.25
001-90-0027R	NQ(2.5)	ND(0.6)	3.1
001-90-1013R	ND(1)	ND(0.25)	1.25
001-90-3042R	ND(1)	ND(0.25)	1.25

There are no pepper processed commodities for which residue data are normally required.

cc: RAB2 Reading file

RDI: (R. Loranger)BSS:2/9/99